MOSQUITO AS A HOUSE INSECT INDUCING BRONCHIAL ASTHMA

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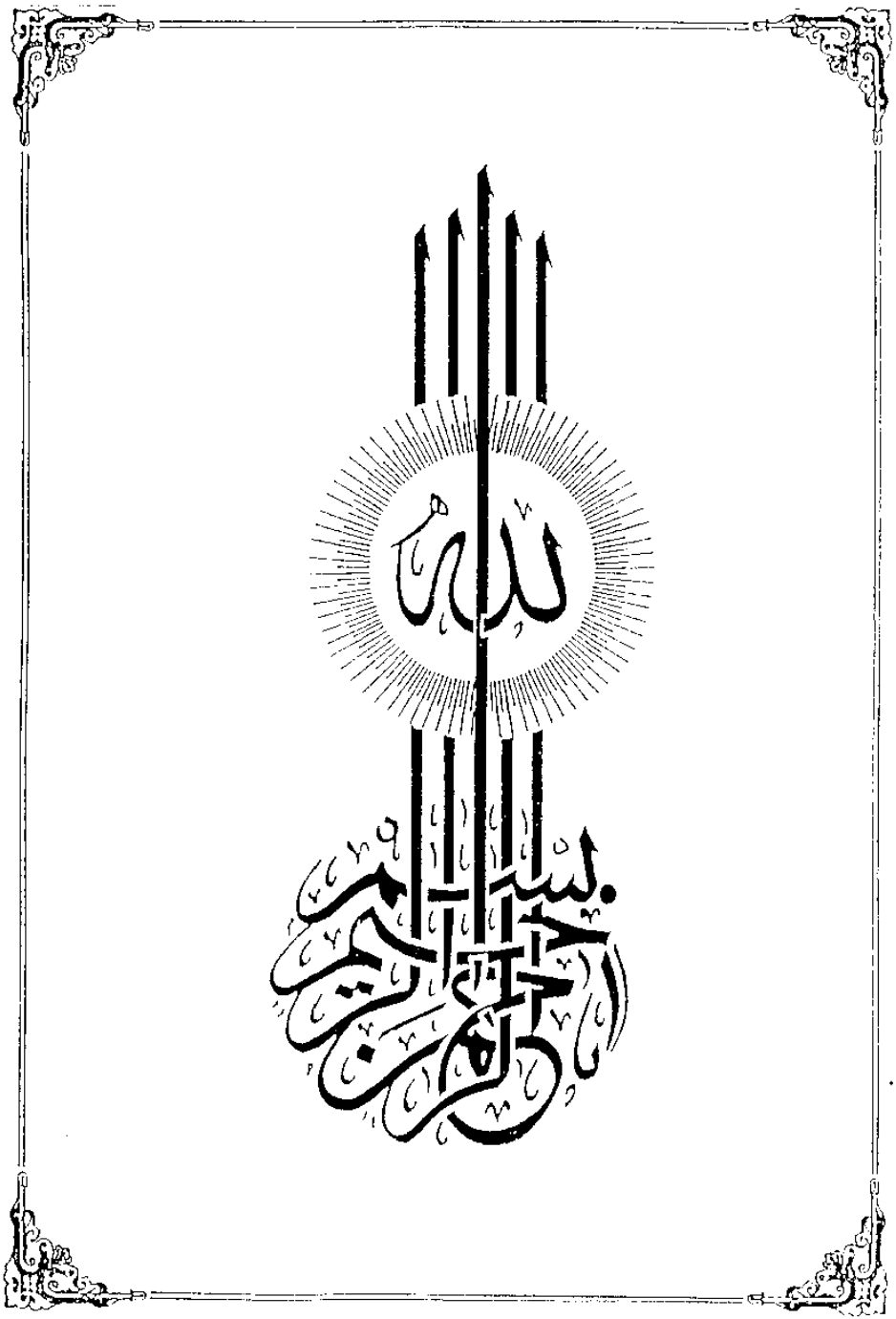

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INTRODUCTION

In previous studies done by many authors, it was found the cause of asthma due to house dust may be partly due to mould allergy (Abou Gamra et al., 1985). Moulds in house dust may be drived from numerous sources such as textile fibres, hairs, animals as cats and dogs danders, insects and pollens. The spores added from the outdoor atmosphere are dependent on geographic situation, seasonal weather and wind factors. Thus, there is no wonder that susceptible individuals may become allergic to one or several kinds of these components which are regularly inhaled through several hours every day.

Insect extracts form an important constituent of house dust components. It was well documented by many authors that materials of insect origin could be broadly dispersed in the air and cause wide spread allergic reactions (Wiseman et al., 1959 & Stevenson et al., 1967). The indoor insects draw the attention of many authors as an important causative agent of allergic bronchial asthma (Chang et al., 1983).

The aim of this study is to investigate the role of mosquito as a house insect in the pathogenesis of bronchial asthma among Egyptian asthmatics.

REVIEW OF LITERATURE

BRONCHIAL ASTHMA

DEFINITION OF BRONCHIAL ASTHMA

The term "asthma" is derived from a Greek word meaning short drawn breath. For many years it was used to describe virtually any disorder that produces sudden attacks of sever shortness of breath (Fish, 1980).

Asthma is most widely understood to be a chronic pulmonary disease characterized by increase irritability of the tracheobronchial tree to a variety of stimuli manifested by recurrent episodes of generalized airways obstruction usually reversible either spontaneously or following appropriate therapy (Sigel, 1984).

Many studies indicated that the common characteristic of all asthmatics is the "twitchy lung syndrome" or hyperreactive airways disease as measured by methacholine or histamine inhalation challenge. In fact, hyperreaction airways to methacholine and/or histamine are so universal among asthmatics that a negative test strongly suggests another diagnosis such as vocal cord dysfunction as the source of intermittent obstruction (Christopher et al., 1983). Because of these considerations,

some believe that the only univocal definition of asthma can be "reversible obstructive airways disease of unknown etiology untill proved otherwise" (farr, 1985).

ETIOLOGY OF ASTHMA

Asthma is a complex disorder, in which many factors are involved in its precipitation, with varying degrees of importance in different individuals.

I. IMMUNOLOGIC FACTORS

Most cases of asthma belong to extrinsic or atopic asthma in which attacks usually follow exposure to environmental antigens or ingestion of food and in generally associated with increased level of total IgE and specific IgE against the allergens. It is also characterized by positive skin test for one or more common antigens (Pepys, 1973).

COMMON ALLERGENS MEDIATING A TYPE I RESPONSE

Immediate type I skin reaction can be induced in individuals giving a history of asthma relating to their exposure to common environmental allergens. These allergens include the following :

(A) **House dust :**

Although the house dust has long been known to cause sneezing and wheezing in sensitive subjects, the exact nature of the main allergen of house dust is unknown. Common components such as feathers, animal and human danders and textiles as well as pollens, atmospheric moulds and insect emanations are all possible allergens (Williams et al., 1976).

(B) **Pollens :**

Pollen grains inhabit the urban & rural atmosphere throughout the year. Grass-Pollen sensitivity characterized by the occurrence of asthma, conjunctivitis and rhinitis is to be almost diagnostic (Hyde, 1972).

(C) **Moulds :**

The major groups most closely linked with respiratory allergy are the Genera Aspergillus, Alternaria and Penicillium. Late summer and autumn are favoured seasons for mould induced asthma. Many mould spores are small in size of 1 - 2 u, this

allows their penetration into the lung and also their longer persistance there (Darke et al., 1976).

(D) **Food allergens :**

Almost any food can be allergenic, but certain foods are more frequently allergenic than others. Those most frequently implicated include cow's milk, egg, nuts, berries, chocolate, wheat and corn. Cooked foods are generally less allergenic than raw foods (Micheal, 1985).

(E) **Animal danders :**

Cat, dog and horse danders have been reported to induce asthma even sever attacks (Deweek, 1976).

(F) **Anti-IgE antibodies :**

Antibodies to IgE have been found in very low titre in 20% of allergic subjects (Williams et al., 1972). Such antibodies could react with IgE on mast cell surface, specially in atopic subjects and stimulate histamine release without mediation of conventional allergens (Johanson et al., 1974).

II. INFECTIOUS FACTORS

Wheezing attacks in asthmatic children are often due to respiratory virus infectious, specially rhinovirus, parainfluenza and coronavirus. Moreover, young childrens who have had an attacks of bronchiolitis usually due to respiratory syncytial or parainfluenza virus are more likely to develop recurrent wheeze later. The significance of bacterial infection is still uncertain, there may be a non specific effect in sensitizing irritant receptors (Gregg, 1977).

III. EXERCISE

All asthmatics respond to exercise with an increase in airways obstruction for no obvious reasons. The mechanism of exercise effect may be due to bronchial irritation by dry cold air, or due to the release of some form of bronchoconstrictor mediators (Godfrey, 1977).

IV. CLIMATE

Sudden changes in weather are often reported by patients to have been associated with asthmatic attacks and several clinical studies have established correlations with some of these factors :